INDEX TO THE ELECTRICAL WORLD, VOL. III.

* Illustrated articles. The weekly Departments are not indexed.

POETRY.

Song of the switchman, The 11

REVIEWS OF NEW BOOKS.

"Absolute Measurements in Electricity and Magnetism" 138
"Electricity, Magnetism and Electrical Telegraphy" 62
"Energy in Nature" 138
"History of Electric Telegraphy to the Year 1837, The" 185
"Notes on Electricity and Magnetism" 107
"Principles and Practice of Electric Lighting" .. 130

CORRESPONDENCE.

Another gong in circuit 203
As old as electric bell hanging itself 162
Associated Press, The—A correction 95
Capacity of the Bernstein incandescent lamp, The 22
Competition in Chicago 86
Elementary study of electricity, The 22
Exit Bell 195
Exit Reis 182
Government telegraph, A 30, 59, 71
Insulating compounds 115
In use over six years 162
Joel lamp, The 115
Magnetized by a line battery 106
Measuring the internal resistance of batteries ... 38
Not new 162
Overturned philosophy 203
Patent 282,016 162
Patent law and the telephone 38
Postal telegraphy objectionable 42
Priority of telephone invention 146
Prof. Brackett's energy meter anticipated 22
Randall's rejoinder for Reis 210
Reis, parent of the telephone 14
Ripening liquors by electricity 58
Telephone rights in Brazil 59

EDITORIALS.

Aasgeier and the telephone, The 168
Advantages of telephonic connection, The 200
After the storm 168
Another "great and only" telephone inventor ... 45
Another scheme for utilizing Niagara 92
Another telegraphic deal 184
Ben Butler and the Bell Co 4
Belated census reports, The 76
Brush Company's officers, The 201
Burnaby on ballooning 192
Cable cabals 45
Cheap experimental apparatus 128
Competing cables 184
Condition of the Patent Office, The 160
Congressional investigations 52
Count du Moncel, Death of 60
Development of electrical inventions The 36
Disadvantages of gas and gasoline, The 44
Dishonest foes of electric lighting 160
Distinguish the articles, To 21
Edible magnetism 184
Edison inventions, The 152
Electric lighting systems 20
Electric light poles to stay, The 76
Electric lighting in Boston 92
Electric light financing in England 121
Electric lighting in theatres 152
Electricity in agriculture 60
Electricity, The elementary study of 4, 68
Electricity for the elevated railroads 68
Electricity and magnetism, The study of 120
Electrical applications in one state 45
Electrical development and manufacturing 45
Electrical journalism 100
Electrical engineering 168
End of our Third Volume, The 208
Ethics of competition, The 20
Era of competition, An 52
Europe, A trip to 160
"Exchange" ethics 100
Exhibition arrangements 200
Experiments in long-distance telephony 37
Franklin Institute and its work, The 185
Good insulators, In search of 85
Good opening for business, A 28
Government and private telegraphs in Canada .. 36
Government telegraphs 21
Government telegraph baits 128
Greek meeting Greek 176
Havoc of the storm, The 60
Honest editorial opinion 112
House bill No. 2655 144
How the T. M. B. A. may be enriched $ 50 20
Incandescent lamp regulator, An 200
Index and binders 6
Insulator and insulating compounds 112
International Electrical Exhibition, The 37
Investigating the Associated Press 84
"Life in the old dog yet" 152
Lighting the Statue of Liberty 136
Magnetism in the manufacture of strawberry boxes 201
Measurement of energy, The 4
Mechanical theory of magnetism, The 100
Model farming 112
Morse code of sea signals, A 176
Morse tablets, The 28
Mr. Edison on the situation 128
Mr. Bates goes over to the B. & O 4
Mr. Bates busy 60
Mutchler bill, The 192
National electrical society, A 100
New cable, The 176
New form of electro-magnet, A 12
New institute, The 101
New test of civilization, A 12
Not so bad as they're painted 45
New underground law, The 208
Old cables and new 144
Patent law, Amending the 60
Patent legislation 144
Philosophy of scientific style, The 152
Phonograph in linguistic science, The 100
Play against loaded dice 176
Postal telegraphy, A contract system of 144
Practical side of international exhibitions, The .. 100
"Praise from Sir Hubert" 209
Preparing for the exhibition 136
Prince Bismarck's lament 150
Printing newspapers by electricity 92
Progressive lighting company, A 200
Protection of oil tanks from lightning, The 208
Proposed electrical conference, The 176
Proposed electrical institute, The 112
roposed electrical congress, The 21
Raid in Congress on patents, The 92
Rarity of telephones in England, The 192
Rewriting history in art 185
Recent improvements, Our 12
Renewal of subscriptions 12
Review of electrical events and progress in 1883. 4
Right to use the highways, A 60
Rivalry in the telegraphic field 45
Scraps of inside history 52
Silicium-bronze wire 13
So far and yet so near 68
Subterranean communications 136
Survival of the fightest 192
Symbol wanted for dynamo, A 76
Tanning by electricity 12
Telegraphic activity 28
Telegraphic situation, The 36
Telegraphic war? Is there to be a 53
Telegraphic news 168
Telegraphic outlook, The 60
Telegraphic right of way 76
"Telegraph" and "Telephone" as legal synonyms 184
Telegraph in China, The 201
Telegraph lines, The actual cost of 68
Telegraph service at the convention 192
Telephone litigation, The course of 36
Telephone, The future of the 128
Telephone restrictions in Great Britain 208
Telephone in Germany, The 176
Telephonic matters 185
Telephonic progress in the West 28
Telephony, Some indirect benefits of 68
Telephonic profit and progress 100
Ten thousand five hundred copies 136
Topics of the hour 153
"Tricks of the trade" 184
Twenty millions a year 192
Underground wires 28
Until the end of the year 112, 120, 128, 136
Van Rysselberghe system of telephony, The 44
Vagaries of inventors, The 84
Wall steet panic, A 160
Western floods, The 52
Weather and the wires, The 84
Western Union quarterly report, The 84
When will the wires go under ground? 200
Wings of riches, The 192
Willing to work for the government 92

THE TELEGRAPH.

Alleged roundabout intrigues 34
*Automatic fast speed telegraphy 166
Baltimore & Ohio official assignments 86
Bankers and Merchants' Company's service 118
*Bennett-Mackay cables, The 53
Bucket shops in Chicago 147
Catching a Tartar 154
Cedar telegraph poles 59
Changes in the district messenger companies ... 54
Codes for cabling 179
Commercial cable progress 206
Commercial Company's cables, The 146
Commercial cable, The first 209
Conflicting telegraph and telephone interests ... 118
Cruel hoax, A 22
Devices for ocean telegraphy 210
Dr. Norvin Green on government telegraphs ... 39
Exchange gossip on Western Union 21
Fight between the Garrett and Gould telegraph companies 106
He forgot to put in the wires 162
How the B. & O. put up their poles 145
Improved Wheatstone punching instruments .. 113
Important suspension, An 159
Laying the new cable 174
Mr. Robert Garrett's plans 35
New companies and the conventions, The 106
New Postal Telegraph directors 147
No further consolidation yet 202
Ocean telegraph stations 137
*Ocean telegraphy 153, 161, 191
Opposing the Commercial cable in France 182
Origin of the B. & O 202
Origin of O. S., The 86
Postal telegraph schemes 61
Postal telegraph bill, The latest 118
Postal Telegraph Co. and the government, The .. 14
Reduction of rates, A 147
Relation between Garrett and Gould, The 66
Seeking a foothold in Massachusetts 131
Singular coincidence, A 181
South American cables 85
"Spirit telegraph," A 11
Swift's "Practical Telegrapher" 161
Telegrams in Canada, The privacy of 113
Telegraph company, Another new 58
Telegraph and Cable Company, The Merchants' .. 46
Telegraph as a means of public protection, The. 109
Telegraph companies in court 202
Telegraph signals, Simplifying the 138
Telegraph wires underground 41
Telegraphs in Philadelphia 182
Telegraph litigation 62, 183
Telegraphic combination, A strong 194
Telegraphs, Investigating the 53
Telegraphic signals on the Erie 29
Telegraphic tyranny, Relief from 66
*Telegraph trimmer, A new 210
Telegraph reports, Two annual 186
Troubles of the Dimock firm, The 170
Two companies fighting for an office 78
Underground telegraph wires in Philadelphia ... 105
Underground wires problem in New York, The. 137
Underground wires in Washington 11, 167
Underground wires, The question of 26
Underground wires discussed at Albany 66
Underground wires 53
Underground wires in Montreal 54
Underground law, Enforcing the new 210
Victims of spurious telegrams 206
Western Union wires, Illegal running of 78

THE TELEGRAPH.

Western Union cable guarantee, The 35
Western Union report 193
What the Postal Telegraph Company is doing ... 43
"You can have another million" 195

THE TELEPHONE.

Bell Telephone Co, Annual meeting of 106
Bell telephone business 66
Bell-Drawbaugh suit, The 22
*Bennett telephone, The 122
Bourseul and Reis 182
*Drawbaugh telephones, The 119
Erie Company's business, The 195
"Good morning, Senorita" 11
Music by telephone in Germany 144
New England Telephone Company, Prospects of the 95
New England Telegraph and Telephone Co., The 150
New Tom Tiddler's ground, A 46
New York telephone companies consolidating .. 29
Not an unmitigated blessing 29
*Stabler individual call, The 73
Telephone, a portable 50
Telephone Company, American Portable 86
*Telephone, Ducousso's 182
Telephone exchange, The Boston 27
Telephone, Early ideas of the 114
Telephone exchange, The Newark, N. J 58
Telephone exchange, The Indianapolis 66
Telephone interests in Canada 207
Telephone dividends 42
Telephone litigation 29
Telephone litigation, Important 38
Telephone service, Boston bereft of 22
Telephone war at Terre Haute, Ind., The 93
Telephone in Michigan, The 114
Telephone in Indiana, The Overland 159
Telephone in the West, The 162
Telephone, A wonderful new 54
Telephone in Mexico, The 66
Telephone in New England, The 170
Telephone in Glasgow, Time by 185
Telephone transmitter, New 193
*Telephonic apparatus, The Gillett long distance 125
Telephonic interests in Mexico 129
Telephonic privileges in Mexico 199
Telephony, Ocean 80
*Van Rysselberghe telephone system, The ... 41, 49
Victor Hugo "helloing" 86
Women as telephonists in England 174

THE ELECTRIC LIGHT.

American Electric and Illuminating Company, The 179
Arc-light, The evolution of the 21
Armington-Sims engine, The 7
Attractive to fish 128
Birds caught and killed by the light 177
*Boston or Bernstein lamp 190
*Brush electric light station, Rochester, N. Y., The 93
*Electric light, The first exhibition of the 117
*Electric light in theatres, The 135, 189
*Electric light stations, Sheehy's switch-board for 137
*Electric light afloat, The 197
Electric light for Santa Claus, The 11
Electric light towers 62
Electric headlight company, An 133
Electric light in Toronto, The 135
Electric light interests in Canada 142
Electric light portraiture 177
*Electric lighting system of the Excelsior Electric Co., The 1, 9, 17
Electric lighting, Western notes on 50
Electric lighting wires in New York 100
Electric lighting, Patent decision affecting 115
Electric lighting, Slow engines for 137
Electric lighting, Vertical engines for 178
*Electric lamps and regulators, 29, 37, 43, 51, 60, 77, 91, 175
Edison lamp in Germany, The 29
Edison light in Europe, The 202
*Finest arc-light station in the country, The 101
How the lighting business grows 54
*Ide engine indicator cards 83
Incandescent lighting for dark offices 185
*Incandescent lighting, Decorative fixtures for .. 81
Lighthouse tests in England 209
Lighting a large race track 191
Middlesex electric light company 203
Montreal's winter carnival—arc lamp illumination 59
Not the American Electric and Illuminating Co. 37
*Pilsen electric lamps, The 89, 104
Standards of illumination 203
*Steam engines for driving dynamo-electric machines 25, 33, 57, 69, 109
St. John's, Que., to be lighted 131
Thomson-Houston incandescent light in Hartford, Conn 202
Thomson-Houston system's merits, The 111
Thomson-Houston system in New Brunswick ... 210
Turning it on our statesmen 27
Two enormous light stations 14
Washington illuminated by electricity 113

MISCELLANEOUS.

Above suspicion 7
Activity of the Western Electric Company 182
Aerial wires a necessity 199
Age of wire 106
Aid of electricity in viticulture, The 151
*Altandi magnet, The 183
*Alternating electric current machines 173
Ambulance signals in New York 193
American institute of electrical engineers, An, 111, 118, 131, 137, 146, 158
Another insulator 22
*Atkinson's four-plate Topler electric machine .. 98
Buffalo Electrical Society 27, 58
Candidate for notoriety, A 45
Cincinnatians studying electricity 137
Cloven foot peeps out, The 118
*Colburn dynamos, The 177
Conductivity of copper 102
Counting papers by electricity 147
*Convenient testing laboratory, A 65
Danchell electric railway, The 11
*Demagnetizing watches 170
*Demagnetizing permanent magnets 162
Detecting zinc and lead in presence of iron 206
*Devices belonging to burglar alarm systems ... 94
Development of a great business 177
*Dvorak's sound radiometer 193
Edison feted at Worcester, Mass 153
*Edwards' dynamo-electric machine 141
Effect of electricity upon watches, The 30
Effect of the storm on the wires 46
Electric laryngoscope, An 174
Electric railway for Switzerland, An 170
*Electric railways 157, 165, 181, 205
Electric wire manufacture 46
Electrical appliances on the farm 110
Electrical interests in Baltimore 114
Electrical experts in patent causes 158
Electrical Development and Manufacturing Co., The 154
*Electrical information for beginners, 66, 98, 121, 134, 167, 207
Electrical notes in Washington 122
Electrical propulsion in new York 70
Electrical study in Cincinnati 82
*Electrical workshops 194
Electrical units 170
Electricity in the last century 151
Electro-deposition of iridium 194
Electromotive force of accumulators, The 175
Expediting legislation by electricity 109
Feasibility of utilizing Niagara 206
*Fletcher's patent tell-tale for watchmen 431
Galvanometer and battery test, A 178
Galvanometer, How to construct a .. 29, 145, 159, 174, 199
Gas bill the cause of mourning, A 111
Gold and Stock Life Insurance Association, The. 29
How the *Citizen* was printed 114
*Improved electric gas-lighting devices 54
Improvements in insulated wire 94
*Improvements in electric gongs 113
Insulators 82
Interesting exhibition, An 65
International Electrical Exhibition, The 122, 166
*International Electrical Exhibition, The 97
Inventors' convention, The 109
Jablochkoff sodium battery 170
Kindness of fellow-feeling, The 38
*Lathe for experimenters, A 113
*Lalonde-Chaperon battery, The 201
Lartigue's electric railway 210
Lava electric insulators 94
*Late Count du Moncel, The 91
Lighting railroad cars 77
*Magnetic polarity and neutrality 169, 190, 209
Magnetization of watches 147
*Moscrop continuous recorder, The 151
Mr. Jay Gould's junketing in Cuba 113
Mr. Van Horne's figures 42
*New energy meter, A 3
*New method of constructing circuit of electric gongs 140
New York Electric Society .. 7, 14, 86, 94, 115, 138, 153, 210
*New adjustable pulley standard for dynamos to replace loose pulleys 3
Notes around Philadelphia 130
Notes from Brazil 182
Patent Office and system, The 118
Patents on inventions 58
*Philadelphia and the International Electrical Exhibition 133, 197
Philadelphia and the exhibition 185
Photography without sunlight 85
Photographing atmospheric electricity 138
*Porcelain insulators 111
Production of atmospheric electricity, The 103
Proposed electrical congress, A 7
Protection for electrical conductors 118
Resistance coils 153
Resistance of insulators, The 86
*Sawyer's strike system for electric clocks 130
Secondary batteries, The safety of 193
Signal Service in New York, The 137
Static electricity 151
Steam engine tests at the Electrical Exhibition. 177
*Two sounders in parallel 211
Spring exodus, The 161
Stock exchange quotations 83
Studies at Yale 50
Studying first principles at Buffalo 46
*Telpherage 149
*Thompson's rheostat 179
Theory of Magnetism, The 103, 110, 134, 142
Trip to Europe, A 176
Transmission of power in Boston 165
Underground devices 119
Uniform standard of electrical resistance, A ... 27
Use of iridium in electrical appliances 122
Use of illuminated girls, The 151
Use of storage batteries at Baltimore 42
*Van Benschoten & Johnson's electric annunciator and fire alarm 169
*Watching the watchman 13
*Wellington belt holder, The 186
*Western Electric Company's new building, The. 83
*With the under dog in the fight 185
Wires in underground conduits 22
Wonderful electric disc, A 143

INDEX TO THE ELECTRICAL WORLD, VOL. IV.

* Illustrated articles. The weekly Departments are not indexed.

REVIEWS OF NEW BOOKS.

"Practical Treatise on Electric Lighting, A".... 29
"Illustrations and Descriptions of Telegraphic Apparatus"..... 264

CORRESPONDENCE.

"Electric Motor Driver"..... 269
Electric light patents..... 22
Fatigue of metals, The..... 254
Lumley dynamo-electric machine, The..... 223
"Motoneer?" Is it to be..... 198
Motoneer, It must not be..... 223
"Motorman"..... 234
Mutineer against motoneer, A..... 211
New Orleans Exposition The..... 257
Nomenclature of electricity, The..... 234
Non-magnetic watches..... 234
Notes on the New Orleans Exposition..... 238
Pan-electric in Texas, The..... 147, 223
Popularity of copper wire, The..... 234
Runners for electric cars..... 71
Science in fairy tales..... 89
Scope of the Bourseul, Reis, Bell apparatus, considered as inventions, The..... 30
Telephone in New Orleans, The..... 269
Telephony..... 11
Telephonic facts and fiction..... 38
Telephonic music in 1876–77..... 242
Value of a diploma..... 242
Volckmar, The late..... 38, 89, 112

EDITORIALS.

Almighty's imperfect work, The..... 28
Approaching exhibition, The..... 44
Arctic observations..... 60
Cable correspondence..... 36
Canadian rendezvous, A..... 84
Close of the exhibition, The..... 132
Coast protection..... 180
Coinage of new words, The..... 228
Communication at sea..... 156
Concessions to the English telephone companies 68
Cowboy telephony..... 252
Curious cable incidents..... 68
Cutting rates..... 21
Dangers of gas, The..... 44
Dog in the manger, The..... 12
Drawbaugh case, The..... 228
Dynagraph cars..... 60
Earthquake shocks..... 52
Educating the people..... 108
Effect of cheap gas, The..... 192
Electric women..... 4
Electric light hygiene..... 20, 168
Electric light wires in theatres..... 132
Electric railways..... 156
Electric locomotion in New York..... 192, 216
Electric railway excitement, The..... 44
Electrical appropriation granted, The..... 12
Electrical exhibition, The..... 96
Electrical industries, The importance of..... 108
Electrical conductors in Paris..... 240
Electrical lingo..... 204
Electricity, Printing by..... 120, 132, 144
European telephone statistics..... 144
European telegraph conference, The..... 216
Exhibition buildings, The..... 4
Exhibition profits..... 144
Exhibitions galore..... 52
Fallen to pieces..... 252
Fighting for supremacy down South..... 204
Fifth electrical exhibition, The..... 68
Four million words..... 52
Franklin's grave..... 53
Future of secondary batteries, The..... 156
Good investment stock, A..... 52
Government telegraph censors..... 252
Government monopoly of the telegraph, A..... 192
"He blew the gas out"..... 180
House to house lighting..... 20
Incubus removed, The..... 240
Index of volume three, The..... 4
International electrical exhibition, The..... 76
International hyphen, A new..... 28
"It presents no legal obstacle"..... 4
Journalistic enterprise, A new..... 228
Law's delay, The..... 21
Liberal patronage of the cable..... 264
Light for foggy days, The..... 264
Light from little lumps of jelly..... 36
Lightning rods and calculators..... 20
Locomotion by electricity in New York..... 52
London exhibitions..... 192
Many an ancient volume..... 52
Money making as the primary object..... 132
Mr. Fawcett, The late..... 192
Mr. Preece's new unit..... 180
Nearest to sunlight..... 28
Neat little cable reserve, A..... 60
Neglected military telegraphers..... 12
New departure, A..... 68
New inventions wanted..... 44
New industry blindly throttled, A..... 60
Notes on the Vienna Electrical Exposition..... 61
Opening of the New Orleans Exposition..... 252
Our lights as others see them..... 264
Output of Bell telephones, The..... 216
Patent Office delays..... 216
Patents in England..... 36
Popularity of copper wire, The..... 204
Pot calling kettle black..... 168
Praiseworthy movement, A..... 228
Priority in printing by electricity..... 204
"Professors of electricity"..... 156
Prometheus unbound..... 168
Prosperous benefit association, A..... 204
Protecting Broadway..... 216
Protean power..... 120
Reduction of dividend, A..... 132
Repair of the Commercial cables..... 240
Reports of the National Conference proceedings. 120
Repression of telephony in England, The..... 44
Rise in telephone stock, The..... 132
Safety in mines..... 252
Scientific iconoclast, A..... 4
Scientific theory and practice..... 96
Secondary batteries..... 144
Slight misapprehension, A..... 4
Submarine cables..... 15
Surplus of the patent office, The..... 228
Sweet simplicity of "motorman," The..... 216
Taking the chances..... 84
Telegraphic outlook, The..... 120
Telegraphic schemes in Congress..... 252
Telegraphic prospects..... 12
Telegraphy and telephony in the Conference..... 168
Telegraphers as scientists..... 96
Telephonic facilities in France..... 20
Telephone, Interest in the..... 12
Too much of a good thing..... 12
Tramps or scientific pilgrims?..... 84
Trial trip, A..... 68, 76, 84
Underground law, Another construction of the.. 108
Underground wires..... 28
Unsolicited compliments..... 168
Use of electricity in elections, The..... 180
Waiting for the telephone..... 264
Way to become an inventor, The..... 252
Western Union optimism..... 28
Work of the Electrical Conference, The..... 96
Work of the National Conference of Electricians, The..... 180
Worth an extra policeman..... 36

TELEGRAPH.

Activity in telegraph extension..... 95
Association of Railway Telegraph Superintendents, The..... 119
Cable notes..... 131
Combination of Western Union's rivals, The..... 21
Commercial cable near New York, Landing the.. 143
Commercial telegram stock..... 21
Commercial cable laid, The first..... 30
Cutting down operators' salaries..... 238
*Experiments in synchronous-multiplex telegraphy..... 69
Government telegraph rates..... 89
Government telegraphs and telephones in England..... 62
Heavy telegraphing in England..... 197
Imperfections and wants of submarine cables... 227
Legal responsibility of telegraph companies, The..... 193
"Mackay-Bennett" cables, The..... 162
"Mackay-Bennett" cable steamer, The..... 172
New central cable office, The..... 38
New cables repaired, One of the..... 246
*Ocean telegraphy—IV..... 13
Ocean telegraphic apparatus..... 30
*Overhead telegraph wire—I., II., III...206, 226, 263
Overhead wires in Philadelphia..... 113
Pneumatic telegraphing in Paris..... 250
Police telegraphs in New York..... 136
Postal telegraph bonds..... 217
*Practical underground system, A..... 137
Practical work of the wires in Brooklyn..... 267
Some old Morse letters..... 210
Southern feeder for the B. & O., A..... 38
Statement in behalf of Western Union, A..... 79
Storm and the wires, The..... 220
Suit against the Commercial Telegram Company, A..... 11
Systems of underground conductors for telegraph lines..... 58
Tapping Coney Island wires again..... 19
Telegraph company enjoined, A..... 51
Telegrams from the "Seat of War" in Egypt... 254
Telegrams as evidence in court..... 27
Telegraph tax cases..... 254
Telegraph suit in equity, A..... 149
Telegraph office at Shanghai, China, The..... 258
Telegraphers' Mutual Benefit Association..... 79
Telegraphic warfare in the South..... 154
Telegraph construction in Western Australia... 197
Three telegraphic companies..... 251
Troubles of the B. & M. Company, The..... 77
Type writer in telegraphy, The..... 175
Underground conductors for New York..... 26
*Underground wires..... 194
Underground wires discussed in Boston..... 207
Underground wires in Washington..... 208
*Useful repeater, A..... 59
Volume of election telegraph business, The..... 190
Western Union Company, Annual meeting of the. 131
Western Union's report..... 247
Western Union quarterly statement, The..... 95
Wired words of the world, The..... 136

TELEPHONE.

Affairs of the Erie Company..... 166
All about Meucci..... 78
Bell-Drawbaugh suit, The..... 111
Bell telephone patents in Canada..... 217
*Clay telephone system, The..... 9
Contracts for telephonic territory..... 222
*Dembinski microphonic telephone transmitter, The..... 3
Drawbaugh claims, The..... 125
*Early telephonic instruments at the Exhibition. 205
*Electric communication between vessels at sea and warning of icebergs..... 193
Erie management..... 62
Erie Telephone Company's dividend, The..... 38
Erie Telephone affairs..... 195
Explaining the telephone to Edison..... 95
Granger's experience with the telephone, A..... 137
How the decision was hailed in Boston..... 226
*Improvements on Blake transmitters..... 26
Judge Wallace's decision..... 229
Legal effect of the Wallace decision..... 246
Long-distance telephony in Russia..... 5
*McDonough telephone, The new..... 165
*Mechanical telephones..... 99
Mechanical telephone, A new..... 131
Meeting of Erie stockholders, A..... 167
Music telephoned over telegraph wires..... 123
Music through the wires..... 226
National Telephone Convention..... 103
National Telephone Exchange Association..... 62
New feat in telephony, A..... 108
Pan-electric in Texas, The..... 185
Portable telephone, The..... 27
Quiet telephony..... 155
Radiophony and wireless telephony..... 178
Scope of the Bourseul-Reis apparatus, The..... 10
Southern telephone exchange, A..... 78
Talmage on telephonic tap..... 205
Telephone in Brazil, The..... 199
Telephone in cattle ranches, The..... 258
Telephone in Europe, The..... 62, 142
Telephone interests in Canada..... 226
Telephone in Russia, The..... 144
Telephone litigation, More..... 53
Telephone in the Patent Office, The..... 172
Telephone suits in France..... 62
Telephone poles in the streets..... 53
Telephone in South Australia, The..... 111
Telephone service up the Hudson..... 247
*Telephonic induction and the amplification of telephonic sounds..... 243
To the victors the spoils..... 242
Underground telephone wires in Brooklyn..... 267
*Western Electric Co.'s new multiple switchboard, The..... 141

ELECTRIC LIGHT.

Arc lights without carbons..... 79
*Arc lamps, Attachments for..... 148
*Brush hand arc-lamp, The..... 143
*Brush dynamo, The new..... 93
Brush patents, The..... 44
*Brush storage battery and manipulator at the Electrical Exhibition..... 117
Change of tune, A..... 267
Chemistry of the carbon filament..... 162, 174
Commercial advance of the Edison system, The. 222
*Davis positive action cut-out and contact changer, The..... 250
*Diehl incandescence lamp, The..... 95
Dr. St. Clair's surgical and dental electric lamp..... 97
Edison light, The..... 143
Edison Company's new trustees, The..... 167
*Edison electric lighting station at Berlin, Germany, The..... 261
Efficiency of lighting systems, The..... 262
Electric light carbons..... 111
Electric lighting, The American system of..... 115
Electric lighting, The economy of..... 111
Electric lighting interests in Boston..... 126
*Electric light in photography, The..... 17
Electric lighting consolidation in Canada..... 218
Electrical light at Racine, Wis., The..... 222
Electric lights in Philadelphia..... 155
Electric lighting on a new steamship..... 150
Electric light in theatres..... 148
*Electric light at Hell Gate, The..... 251
Electric light in mines, The..... 75
Electric lighting at Toronto, Can..... 88
Electric lighting of the Louisville Exposition, The 88
Electric light vs. gas in Boston..... 38
Electric light in England, The..... 46
Electric light on the battle-field, The..... 61
Electric lighting in Hartford, Conn..... 2
*Electric jewelry..... 43
Electric lighting at the London Health Exhibition..... 25
Electricity for light-house service..... 3
Electric light in English iron works, The..... 198
Electric light on English troop-ships, The..... 202
Electric lighting of railroad cars..... 205
Electric light on the Old Colony line, The..... 246
Electric lighting in America..... 265
Electric lighting in public parks..... 240
Electric light in the Mechernich mines, The..... 185
Enlightening benighted Peru..... 219
Excelsior Company's activity, The..... 186
*Experiment in England, An important lighting, 18
Extra brilliancy, economy and safety..... 233
Fighting for dear life..... 239
*Gerard dynamo-electric machines and lamps... 157
*Illumination of fountains by electricity..... 177
*Incandescent light in interior decoration, The.. 237
Ithaca's electric light company..... 258
*Latest Weston incandescence lamp, The..... 81
Lights at Hell Gate, The..... 198
Light-house tests..... 27
Lighting the New Orleans Exposition..... 121
*Lighting plant of the Consolidated Electric Light Co..... 153
Lighting a swing bridge..... 75
Lighting Hell Gate..... 158
Long-distance electric lighting..... 186
Nothing wrong with the light..... 215
Pioneer electric light station of England, The... 258
Power required by the sun lamp, The..... 67
Problems of ship lighting, The..... 240
Progress of electric lighting in England..... 168
Protection to the cotton fields, A..... 186
Pyle electric headlight, The..... 124
Saratoga lighted..... 22
Sawyer-Man Company, The progress of the..... 14
*Science against superstition..... 33
*Simple form of arc lamp, A..... 58
Storage batteries and incandescent lamps..... 136
*Surgical and dental electric lamp, A..... 97
Thomson-Houston at Elmira, N. Y., The..... 38
*Towers for electric lighting..... 2
*Van Depoele system at the Exhibition, The.... 109
*Weston mammoth incandescence lamp, The... 129
Winning its way in France..... 198
Wooley headlight, The..... 22
Wooley headlight in operation, The..... 62

MISCELLANEOUS.

Aerial navigation..... 268
Amalgamation of aluminium and iron, On the.. 192
American Association notes..... 82, 91
American Association proceedings..... 99
*American automatic lightning arrester, The.... 21
American Company's process, The..... 53
*American Electrical Exhibition, The..... 143, 201
American Electrical Exhibition, Boston, The... 268
American Electrical Exhibition in Boston, The, 167, 240
American Institute of Electrical Engineers..68, 111, 129
Analytical and systematic method of inventing, An..... 208, 255
*Annular magnets..... 37
Associated Press on the defensive, The..... 234
Automatic dynamo protector, A new..... 139
Bartholdi Statue of Liberty, The..... 45
*Benjamin's air pump..... 155
*Benjamin's Voss-Holtz electric machine..... 147
Boston Electrical Exhibition, The..... 221, 228
*Braiding machines for insulation..... 55
British Association Meeting at Montreal, The, 47, 70, 74, 85
*Broomhall's insulators and pole caps..... 202
Broadway electric railway, The..... 42
Canadian electric railway..... 113
Cardew winding of dynamos, The..... 3
Case under the Daly act, A..... 38
Case's electrolytic fluid for secondary or storage batteries..... 162
Clark's standard cell..... 186
Closing the Exhibition..... 143
*Col. Chas. H. Banes..... 88
*Combined engines and dynamos..... 19
Combination of motor interests..... 222
Comparison of the transmission of force by electricity with the other most common mechanical transmissions..... 42
Conductivity of metals and alloys..... 43
Consolidating electric railway interests..... 226
Copper pool broken, A..... 264
Cut-outs and safety-plugs..... 113
Daft electric railway, The..... 42
Daft electric railway at Boston, A..... 95
Daft electric motor, The..... 57
Death of the English postmaster-general..... 180
Death of Lord Lauderdale, The..... 68
Delicate operation, A..... 131
Deoxidized copper wire..... 139
Deprez on electric synchronism..... 150
Desilverization of lead by electrolysis, The..... 98
*Detecting the detective..... 246
Determination of the ohm..... 242
*Diehl's electric motor..... 139
*Disque Leclanche battery..... 46
Dissatisfied operators..... 259
Distribution of electrical energy, The..... 220
*Dynamo-electric machinery..... 218, 227, 241, 253
Edison on electric motors..... 42
Edison on electrical applications..... 78
Edson's standard pressure gauges, Edson's speed and pressure recording and alarm gauges..... 210
Electric actinometer, An..... 124
Electric ballooning..... 129
Electric filtration..... 124
*Electric drilling in mines..... 25
Electric motors and the elevated railways..... 268
Electric railways..... 63
Electric railway for the west, An..... 155
Electric railroad underground, An..... 244
*Electric railways—V., VI..... 1, 49
Electric transmission of power in mines..... 204
Electrical boiler alarm, An..... 219
Electrical chart, An..... 211
Electrical congresses of the past..... 219
Electrical insulation, New..... 2
Electrical transmission of power in France..... 162
Electrical Development and Manufacturing Co., The..... 127
*Electrical switches..... 193
Electrical Exhibition, The..... 63
Electrical development in Boston..... 66
Electrical proof of death..... 67
Electrical Exhibition, After the..... 155
Electrical Exhibition prizes..... 234
Electrical study in Cincinnati..... 13
Electrical exhibition at Boston, An..... 14
*Electrical information for beginners—VII..... 45
Electricity for the elevated roads..... 266
Electricity on the elevated roads..... 247
Electricity vs. horseflesh..... 43
Electricity to weaving, The application of..... 36
Electrolysis of sulphuric acid in accumulators.. 33
*Electro-medical apparatus at the exhibition... 173
*Electro-technics at the Vienna exposition...61, 67
English Physical Society..... 249
English electric tramway, An..... 43
Exhibits of the American Electrical Works..... 225
Exhibits at the International Electrical Exhibition..... 81, 112, 115, 118, 150, 156
*Exhibit of the Standard Electrical Works, The. 203
*Exhibition notes..... 28
Exhibition notes..... 54, 103, 115, 118
Experiments in "superheating"..... 262
Experimental method of studying the dynamo machine, An..... 130
*Expired patents on magneto or dynamo electric machines..... 214, 239
Fast sending contest, A..... 59
Field electric railway interests, The..... 41
Franklin's ancestry..... 173
Franklin Institute prizes for children, The..... 220
*Frictional arrangement for driving dynamos.. 41
*Frisbie patent friction clutch at the Electrical Exhibition, The..... 245
Frolic by way of finale, A..... 148
*Galvanometers at the Electrical Exhibition, 110, 136, 179, 209
Generation of electricity in flour mills..... 67
Good news for the deaf..... 54
Growth of electric nomenclature, The..... 217
*Hall effect, The..... 184
*Hatching by electricity..... 35
*Hedges' spark-reducing switches and commutators..... 121
History of photometry..... 34
How the election news was reported..... 197
Holding back election returns..... 180
How to produce a rainbow..... 37
Howe underground system, The..... 29
How to construct a galvanometer—VI..... 23
Improver of animal spirits, An..... 239
Influence of electricity on bread, The..... 124
*Instruction in electrical engineering..... 122
*International Electrical Exhibition, The..... 65
*Interior view of the exhibition, An..... 82
International inventious exhibition, London, The 221
Keely motor, The..... 115
Krebs-Renard directible balloon..... 178
"Law prism" battery, The new..... 233
Light of other days, The..... 245
Lightning on the Brooklyn Bridge..... 21
Lightning rods, The efficiency of..... 121
Lion taming by electricity..... 108
Lipmann's electro-dynamometer..... 175
*Lock wire insulator, The..... 150
*Lubrication of machinery, The..... 5
*Manufacture of copper wire in France, The..... 189
*Manufacture of insulated wires, The..... 22
*Magnetometers at the electrical exhibition..93, 119
Magnetic polarity and neutrality (concluded).... 14
*McFall combination magneto bell, The..... 78
Meaning of sun spots, The..... 76
Measurement of currents..... 121
*Mechanical wire testing apparatus at the exhibition..... 207
Meeting of the Institute of Electrical Engineers. 81
Mercurial galvanometer, On a..... 5
Messenger service, Uses of the..... 88
Method of testing iron and steel by magnetism, A 46
Mind's telegraph, The..... 163
Moonlight excursion, A..... 46
Mr. Edison's views and work..... 221
National Electrical Commission..... 46
*National Conference of Electricians, 86, 100, 102, 106, 126, 133, 145, 159, 169, 181
*Navigation in fogs..... 51
New York Electrical Society..... 3, 14
New batteries..... 57
*New braider, A..... 150
New English postmaster-general, The..... 259
New mine of humor, The..... 195
*New theory of the "Hall effect," A..... 217
New units, The introduction of..... 210
Niagara, A little utilization of..... 195
Nomenclature of electricity..... 244
*Non-magnetic watches..... 198
Note on a new form of galvanometer for powerful currents..... 4
Obituary—Robert Henry Sabine..... 196
*On a possible method of electrical communication between vessels at sea..... 149
*Opening of the International Electrical Exhibition..... 73
*Oppermann dynamo-electric and alternating current machine, The..... 75
*Orne battery, The..... 268
Outlook for copper, The..... 47
Partrick & Carter exhibit..... 196
Personal safety with electric currents..... 214
Performance of the Daft electric motor..... 199
Philadelphia and the Exhibition..... 5, 53
Physiological measurement of electricity..... 151
*Pratt & Whitney Co.'s gauges at the Electrical Exhibition..... 186
Precious paraffine..... 214
Press notices of the exhibit..... 97
*Preventive of boiler explosions, A..... 138
*Printing by electricity..... 97
Printing by electricity, The cost of..... 172
Producing electricity directly from coal..... 115
Profits of the late Exhibition, The..... 214
Prof. Kinnersley, the electrician..... 101
Professor Bell's life in Washington..... 252
Progress of electric locomotion..... 259
Proposed combination of electro-motor interests. 209
Proposed American electrical exhibition at Boston 74
Providence clam bake, The..... 71
*Reckenzaun motor at the Electrical Exhibition, The..... 190
Repulsion between magnetic lines of force..... 261
Safety for flour mills..... 37
Safety lamps for mines..... 58
Science congress at Philadelphia, The..... 89
Scientists relaxing at Baltimore..... 155
*Security electric signal..... 191
*Self-binding, high-resistance insulators..... 124
*Short circuiting of lightning currents..... 193
Silver voltameter, The..... 38
Sir William Thomson, Arrival of..... 58
"Skeered" of suspenders..... 233
Small storage batteries..... 11
*Some American galvanometers at the Philadelphia Electrical Exhibition..... 262
Storage batteries..... 211
Storage battery for miners, A..... 175
Strange peril and brave rescue..... 233
*Straight line engine at the Philadelphia Exhibition, The..... 249
Submarine investigation, For..... 31
Submarine mine explosives and fuses..... 202
Teaching the young idea..... 77
They love the work..... 139
Theory of magnetism..... 30
Those election returns..... 202
T. M. B. A., annual meeting, The..... 204
"To what base uses"..... 222
Troubles at the Miscellaneous Stock Exchange.. 22
Turin Electrical Exhibition, The..... 19
Tyndall's early life..... 180
Underground law in Brooklyn, The new..... 3
*Wallace carbons at the Exhibition..... 213
*Warth's lightning arrester..... 51
Wave theory of light..... 154
Westinghouse engine, The..... 172
*Weston exhibit at the Electrical Exhibition, The 105
*Western Electric Co.'s hotel fire alarm and room call..... 167
Widening use of copper, The..... 246
Who was his partner?..... 121
Wooden magnets to cure disease..... 258
*Wooden pulleys..... 54
Work of the Patent Office, The..... 234
Worse than "bulls" or "bears"..... 75
Young speed indicator, The..... 91
Zinc accumulator, A new..... 149

344,539